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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,084	11/29/2004	Ulrich Bast	2002P07513WOUS	9657

7590 04/17/2006

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Intellectual Property Department
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EXAMINER	
NGUYEN, HOAI AN D	

ART UNIT	PAPER NUMBER
2858	

DATE MAILED: 04/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/516,084	BAST ET AL.	
	Examiner	Art Unit	
	Hoai-An D. Nguyen	2858	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *36-42* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *36-42* is/are rejected.

7)☒ Claim(s) *36* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *29 November 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Receipt is acknowledged of the Amendment filed on March 8, 2006. Claims 36-42 are pending in the application.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: Device for Detecting Degradation of a Ductile Metal Component.

Claim Objections

3. Claim 36 is objected to because of the following informalities: "a" before "ductile" on line 3 should be replaced with -- the -- or -- said – since "a ductile" has been previously defined on line 1. Appropriate correction is required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claim 36 is rejected under 35 U.S.C. 102(b) as being anticipated by Kajino (US 5,355,734 A).

Kajino teaches a life predicting gauge for structure and life predicting method employing the same comprising:

With regard to claim 36, a detector (FIG. 3) adapted to detect degradation of a ductile metal component (FIG. 1, frame 1), the detector comprising: a monitoring structure (FIG. 1, bending load detecting gauge 4) applied to a surface of a ductile metal component (FIG. 1, frame 1) (Column 2, lines 41-44), and a monitoring device (FIG. 3, tester 10) adapted for interrogation of the monitoring structure (Column 3, lines 29-32), wherein the monitoring structure comprises an electrical conductor (FIG. 3, crack gauge 9) formed of a material that is more brittle (having a shorter fatigue life than the structure) than the ductile metal component so that a bending of the ductile metal component results in a crack in the electrical conductor causing a change in an electrical property (variation of a resistance) of the monitoring structure detectable by the monitoring device as a degradation of the component by bending (Abstract, column 1, lines 50-61 and from column 3, line 29 to column 4, line 27).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kajino in view of Ueda et al. (US 4,026,660 A).

Kajino teaches all that is claimed as discussed in the above rejection of claim 36, including the monitoring structure (FIG. 3, bending load detecting gauge 4) comprises a resonant circuit (FIG. 1, crack gauge 9) comprising the electrical conductor (FIG. 4, elementary wires 13) and a capacitor (formed by any two adjacent wires 13), and a monitoring device (FIG. 3, tester 10) adapted for interrogation of the monitoring structure, but it does not specifically teach the following:

- The monitoring device comprises an antenna for interrogation of the monitoring structure via electromagnetic signal exchange.

However, Ueda et al. teaches a crack detecting means for rotor blades of rotary wing aircrafts comprising:

With regard to claim 37, an antenna (means for detecting cracks and then transmitting crack signals electromagnetically for interrogation of the monitoring structure via electromagnetic signal exchange (Column 1, lines 41-66 and column 3, lines 41-50).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the life predicting gauge for structure of Kajino to incorporate the teaching of using an antenna for interrogation of the monitoring structure via electromagnetic signal exchange taught by Ueda et al. since Ueda et al. teaches that such an arrangement is beneficial to provide means for detecting cracks in structure in which crack signals are transmitted electromagnetically with minimum influence of surrounding conditions such as ambient temperature and centrifugal forces as disclosed in column 1, lines 33-45.

8. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kajino in view of Bast et al. (US 5,647,667 A) and a court decision about Reversal, Duplication, or Rearrangement of Parts according to MPEP § 2144.04, section VI.

Kajino teaches a life predicting gauge for structure and life predicting method employing the same comprising:

With regard to claim 38, a monitoring structure (FIG. 1, bending load detecting gauge 4) applied to a surface of a heat shield (FIG. 1, frame 1) at a portion where a bending force is active (Column 2, lines 41-44) and comprising an electrical conductor (FIG. 4, elementary wires 13) attached to the heat shield, and a monitoring device (FIG. 3, tester 10) adapted for interrogation of the monitoring structure (Column 3, lines 29-32), wherein a crack propagation, crack extension over overall width in the monitoring structure (FIG. 1, bending load detecting gauge 4) can be accurately detected (Abstract, column 1, lines 50-61 and from column 3, line 29 to column 4, line 27).

However, it does not specifically teach the followings:

- A ceramic heat shield deemed acceptable only in the absence of any crack propagating from an edge of the heat shield toward a center of the heat shield exceeding a defined critical length.
- The monitoring structure is attached to the heat shield at a distance equal to the critical length from the edge of the heat shield.

On one hand, Bast et al. teaches a method for testing a structural ceramic part to detect a crack (Column 2, lines 19-24) comprising:

With regard to claim 38, a ceramic heat shield (FIG. 1, ceramic heat shield 1) deemed acceptable (undamaged parts) only in the absence of any crack propagating from an edge of the heat shield toward a center of the heat shield exceeding a defined critical length (specific crack length) (From column 3, line 66 to column 4, line 5 and column 5, lines 37-48).

On the other hand, the features upon which applicant relies (i.e., attaching the monitoring structure to the heat shield at a distance equal to the critical length from the edge of the heat shield) is not sufficient by itself to patentably distinguish over Kajino. *In re* Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950) (Claims to a hydraulic power press which read on the prior art except with regard to the position of the starting switch were held unpatentable because shifting the position of the starting switch would not have modified the operation of the device.); *In re* Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975) (the particular placement of a contact in a conductivity measuring device was held to be an obvious matter of design choice). However, "The mere fact that a worker in the art could rearrange the parts of the reference device to meet the terms of the claims on appeal is not by itself sufficient to support a finding of obviousness. The prior art must provide a motivation or reason for the worker in the art, without the benefit of appellant's specification, to make the necessary changes in the reference device." *Ex parte* Chicago Rawhide Mfg. Co., 223 USPQ 351, 353 (Bd. Pat. App. & Inter. 1984). This support can be found in MPEP § 2144.04, VI. REVERSAL, DUPLICATION, OR REARRANGEMENT OF PARTS.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the life predicting gauge for structure of Kajino to incorporate the teaching of attaching the monitoring structure to the heat shield at a distance equal to the

critical length from the edge of the heat shield since such an arrangement is beneficial to provide a method for testing a structure to detect a crack in order to eliminate faulty parts having a crack size lying above a limit value.

In addition, the features upon which applicant relies (i.e., at a distance equal to the critical length from the edge of the heat shield) is not sufficient by itself to patentably distinguish over Kajino. According to Optimization Within Prior Art Conditions or Through Routine Experimentation section in MPEP, "[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." *In re* Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955) (Claimed process which was performed at a temperature between 40°C and 80°C and an acid concentration between 25% and 70% was held to be prima facie obvious over a reference process which differed from the claims only in that the reference process was performed at a temperature of 100°C and an acid concentration of 10%.); see also Peterson, 315 F.3d at 1330, 65 USPQ2d at 1382 ("The normal desire of scientists or artisans to improve upon what is already generally known provides the motivation to determine where in a disclosed set of percentage ranges is the optimum combination of percentages."); *In re* Hoeschele, 406 F.2d 1403, 160 USPQ 809 (CCPA 1969) (Claimed elastomeric polyurethanes which fell within the broad scope of the references were held to be unpatentable thereover because, among other reasons, there was no evidence of the criticality of the claimed ranges of molecular weight or molar proportions.). For more recent cases applying this principle, see Merck & Co. Inc. v. Biocraft Laboratories Inc., 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989); *In re* Kulling, 897 F.2d 1147, 14 USPQ2d 1056 (Fed. Cir. 1990); and *In re* Geisler, 116 F.3d 1465, 43

USPQ2d 1362 (Fed. Cir. 1997). This support can be found in MPEP § 2144.05, II. OPTIMIZATION OF RANGES.

9. Claim 39 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kajino in view of Bast et al. and a court decision about Reversal, Duplication, or Rearrangement of Parts according to MPEP. § 2144.04, section VI as applied to claim 38 above, and further in view of a court decision about Changes in Size, Shape, or Sequence of Adding Ingredients according to MPEP § 2144.04, section IV.

Kajino and Bast et al. teach all that is claimed as discussed in the above rejection of claim 38, including the monitoring structure (FIG. 3, bending load detecting gauge 4) comprises the electrical conductor (FIG. 4, elementary wires 13), but it does not specifically teach the following:

- The electrical conductor is formed in the shape of a ring, with regard to claim 39.

However, according to a court decision about Changes in Size, Shape, or Sequence of Adding Ingredients, this configuration of the claimed device was not patentably distinct from the prior art device. *In re* Dailey, 357 F.2d 669, 149 USPQ 47 (CCPA 1966) (The court held that the configuration of the claimed disposable plastic nursing container was a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant.).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the life predicting gauge for structure of Kajino to incorporate the teaching of forming the electrical conductor in the shape of a ring since such an arrangement is a matter of choice which a person of ordinary skill in the art would have found

obvious and beneficial to provide another desirable application for an intended use of the system since this is what would be expected during the normal and intended use of the system of Kajino.

10. Claim 40 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kajino in view of Bast et al. and a court decision about Reversal, Duplication, or Rearrangement of Parts according to MPEP § 2144.04, section VI as applied to claim 38 above, and further in view of Ueda et al.

Kajino and Bast et al. teach all that is claimed as discussed in the above rejection of claim 38, including the monitoring structure (FIG. 3, bending load detecting gauge 4) comprises a resonant circuit (FIG. 1, crack gauge 9) comprising the electrical conductor (FIG. 4, elementary wires 13) and a capacitor (formed by any two adjacent wires 13), and a monitoring device (FIG. 3, tester 10) adapted for interrogation of the monitoring structure, but it does not specifically teach the following:

- The monitoring device comprises an antenna for interrogation of the monitoring structure via electromagnetic signal exchange.

However, Ueda et al. teaches a crack detecting means for rotor blades of rotary wing aircrafts comprising:

With regard to claim 40, an antenna (means for detecting cracks and then transmitting crack signals electromagnetically for interrogation of the monitoring structure via electromagnetic signal exchange (Column 1, lines 41-66 and column 3, lines 41-50).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the life predicting gauge for structure of Kajino to incorporate the teaching of using an antenna for interrogation of the monitoring structure via electromagnetic signal exchange taught by Ueda et al. since Ueda et al. teaches that such an

arrangement is beneficial to provide means for detecting cracks in structure in which crack signals are transmitted electromagnetically with minimum influence of surrounding conditions such as ambient temperature and centrifugal forces as disclosed in column 1, lines 33-45.

11. Claim 41 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kajino in view of Bast et al. and a court decision about Reversal, Duplication, or Rearrangement of Parts according to MPEP § 2144.04, section VI as applied to claim 38 above, and further in view of a court decision about Art Recognized Suitability for an Intended Purpose according to MPEP § 2144.07.

Kajino and Bast et al. teach all that is claimed as discussed in the above rejection of claim 38, including the monitoring structure (FIG. 1, bending load detecting gauge 4) applied to a surface of a heat shield, but it does not specifically teach the following:

- The heat shield is not accessible in an installed state in a gas turbine engine.

With regard to claim 41, the features upon which applicant relies (i.e., heat shield inaccessible in an installed state in a gas turbine engine) is not sufficient by itself to patentably distinguish over Ueda et al. In re Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) (Claims to a printing ink comprising a solvent having the vapor pressure characteristics of butyl carbitol so that the ink would not dry at room temperature but would dry quickly upon heating were held invalid over a reference teaching a printing ink made with a different solvent that was nonvolatile at room temperature but highly volatile when heated in view of an article which taught the desired boiling point and vapor pressure characteristics of a solvent for printing inks and a catalog teaching the boiling point and vapor pressure characteristics of butyl carbitol. "Reading a list and selecting a known compound to meet known

requirements is no more ingenious than selecting the last piece to put in the last opening in a jig-saw puzzle." 325 U.S. at 335, 65 USPQ at 301.). See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious); Ryco, Inc. v. Ag-Bag Corp., 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) (Claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic brakes for performing the same function, albeit in a different environment.). This support can be found in MPEP § 2144.07, Art Recognized Suitability for an Intended Purpose.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the life predicting gauge for structure of Kajino to incorporate the teaching of applying the monitoring structure to the heat shield inaccessible in an installed state in a gas turbine engine since such an arrangement is beneficial to provide another desirable application for an intended use of the system because this is what would be expected during the normal and intended use of the system of Kajino.

12. Claim 42 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kajino in view of Bast et al., a court decision about Reversal, Duplication, or Rearrangement of Parts according to MPEP § 2144.04, section VI, and Ueda et al. as applied to claim 40 above, and further in view of a court decision about Art Recognized Suitability for an Intended Purpose according to MPEP § 2144.07.

Kajino, Bast et al. and Ueda et al. teach all that is claimed as discussed in the above rejection of claim 40, including the monitoring structure (FIG. 1, bending load detecting gauge 4) applied to a surface of a heat shield, but it does not specifically teach the following:

- The heat shield is not accessible in an installed state in a gas turbine engine.

With regard to claim 42, the features upon which applicant relies (i.e., heat shield inaccessible in an installed state in a gas turbine engine) is not sufficient by itself to patentably distinguish over Ueda et al. In re Sinclair & Carroll Co. v. Interchemical Corp., 325 U.S. 327, 65 USPQ 297 (1945) (Claims to a printing ink comprising a solvent having the vapor pressure characteristics of butyl carbitol so that the ink would not dry at room temperature but would dry quickly upon heating were held invalid over a reference teaching a printing ink made with a different solvent that was nonvolatile at room temperature but highly volatile when heated in view of an article which taught the desired boiling point and vapor pressure characteristics of a solvent for printing inks and a catalog teaching the boiling point and vapor pressure characteristics of butyl carbitol. "Reading a list and selecting a known compound to meet known requirements is no more ingenious than selecting the last piece to put in the last opening in a jig-saw puzzle." 325 U.S. at 335, 65 USPQ at 301.). See also In re Leshin, 227 F.2d 197, 125 USPQ 416 (CCPA 1960) (selection of a known plastic to make a container of a type made of plastics prior to the invention was held to be obvious); Ryco, Inc. v. Ag-Bag Corp., 857 F.2d 1418, 8 USPQ2d 1323 (Fed. Cir. 1988) (Claimed agricultural bagging machine, which differed from a prior art machine only in that the brake means were hydraulically operated rather than mechanically operated, was held to be obvious over the prior art machine in view of references which disclosed hydraulic brakes for performing the same function, albeit in a different

environment.). This support can be found in MPEP § 2144.07, Art Recognized Suitability for an Intended Purpose.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify the life predicting gauge for structure of Kajino to incorporate the teaching of applying the monitoring structure to the heat shield inaccessible in an installed state in a gas turbine engine since such an arrangement is beneficial to provide another desirable application for an intended use of the system because this is what would be expected during the normal and intended use of the system of Kajino.

Response to Arguments

13. Applicant's arguments with respect to claims 38-42 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

14. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Applicant's attention is invited to the followings whose inventions disclose similar devices.

- Dufrane et al. (US 4,255,974 A) teaches an adherent crack gauge.
- Crites (US 4,484,132 A) teaches a crack detecting system.

CONTACT INFORMATION

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoai-An D. Nguyen whose telephone number is 571-272-2170. The examiner can normally be reached on M-F (8:00 - 5:30) First Friday Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on 571-272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

ANJAN DEB
PRIMARY EXAMINER

Hoai-An D. Nguyen
Examiner
Art Unit 2858

HADN